DOCUMENT RESUME

ED 300 874 EA 020 215

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TITLE QSL: A Social System's Intervention To Improve Elementary School/Classroom Climate.
PUB DATE Aug 87
NOTE 23p.; Paper presented at the Annual Meeting of the American Psychological Association (95th, New York, NY, August 28-September 1, 1987).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Behavioral Sciences; *Classroom Environment; Elementary Education; Interpersonal Competence; *Organizational Climate; *Participative Decision Making; *Quality Circles; *Student Participation
IDENTIFIERS *Learning Environment

ABSTRACT

The drive for improved school and classroom climate, for increased teacher and student involvement in decision-making, and for more positive teacher and student expectations are becoming prime areas for joint educational and behavioral science efforts. This paper evaluates the effectiveness of a year-long classroom social competence training program (PI/PSP: Enhancing Classroom Climate through Pupil Involvement and Problem Solving with People) functioning as part of a larger Quality of School Life program to advance these goals. The program examines elementary classrooms' ability to use an eight-step problem-solving sequence and reach consensus on effective action plans. Subjects included 8 classrooms that participated in the 21-lesson program and 8 classrooms that did not. All classrooms were evaluated at pre- and post-intervention via videotaped problem-solving sessions coded for ability to meet certain goals. Following training, program classes were significantly better than comparison classes at identifying a relevant main problem, focusing on appropriate means and ends, and reaching consensus on effective action plans. In contrast to comparison classes, program classes generated more effective solutions and fewer static responses and were rated higher on several decision-making climate indices. Results are discussed in terms of the implications of a year-long pupil involvement social competency training program. Included are 6 tables, 3 appendices, and 34 references. (Author/MLH)

QSL: A Social System's Intervention to Improve Elementary School/Classroom Climate[1,2]

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***ABSTRACT**: The present study evaluated the effectiveness of a year-long classroom social competence training program (QSL:PI /PSP) for upper and lower elementary school classrooms; it examined the ability of total classrooms to utilize an eight-step problem-solving sequence (PSP) and to reach consensus on effective action plans. Subjects included 8 classrooms which participated in the 21+ lesson program and 8 comparison classrooms which did not. All classrooms were evaluated at pre- and post-intervention, via videotaped problem-solving sessions, coded for ability to follow sequence, observational/empathy skills, antecedent thinking, problem identification, effectiveness and content of means/ends suggestions, consensual action planning, and group decision-making climate. Following training, program classes were significantly better than comparison classes at identifying a relevant main problem, at focusing on appropriate means and ends, and at reaching consensus on effective action plans. In contrast to comparison classes, program classes generated a significantly greater percentage of effective solutions and fewer "static" responses. Program classes were also rated higher on several relevant decision-making "climate" indices. Results are discussed in terms of the implications of a year-long pupil involvement (PI) social competency training program, with support for attention to whole-class effects.*

Two contemporary publications — one from the National Commission for Excellence in Education (1983) and the other from the U.S. Department of Education (Kyle, 1985) — have identified a number of specific foci for educational reform. Because these and similar publications have highlighted and legit-

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[1] Paper presented at the 95th Annual Convention of the American Psychological Association, New York, August, 1987.

[2] This research was supported by a grant to the Washtenaw County Community Mental Health Center, by the Prevention Services Unit of the Michigan Department of Mental Health.

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imized specific correlates of educational effectiveness and excellence — school boards, administrators, and teaching staffs of the nation's schools have been investing considerable amounts of resources, time, and attention to changing the ways teaching and learning occur. Several of the identified "effectiveness" and "excellence" correlates reflect the need for an educational and behavioral science collaboration, in order to create an appropriate technology for widespread attainment of these goals. The drive for improved school and classroom climate, for increased teacher and student involvement in decision-making, and for more positive teacher and student expectancies are prime areas for joint educational and behavioral science efforts.

This paper reflects a partial evaluation of a K-6 curriculum, *PI/PSP: Enhancing Classroom Climate through Pupil Involvement and Problem Solving with People* (Schelkun, 1987), which functions as a portion of a more ambitious four-level "systems" intervention to advance these goals by enhancing the Quality of School Life for elementary schools (QSL-E). *PI/PSP* is an enhanced, year-long social competency training program, based on extensive development and research of related concepts and curricula since the 1950's. It brings together three major strands of intervention and research: (1) Social competency training, via similar, structured, interpersonal cognitive problem-solving curricula, (2) Organizational development (OD) "systems interventions," via structured organizational development training and consultative interventions, and (3) Quality of Work life/Quality circle (QWL/QC) employee involvement models, which have become standard throughout business and industry.

HISTORICAL CONTEXT

Social competency training

During the 1950's and early 60's, Ralph Ojemann (1961) pioneered and popularized a system of behavioral science collaborations with educators. He and his colleagues at the Educational Research Council of America (ERCA) developed, researched, and widely disseminated attractive, easily accessible, elementary school curricula for "causal learning" through "antecedent" and "causal" thinking (Muus, 1960). Then, during the 1970's, an "affective education" movement prematurely deluged the schools with a broad variety of appealing materials, many of which represented fairly ambiguous attempts to develop children's empathy, self-esteem, and social problem-solving abilities. Many of these programs were opportunistic, conceptually vague, and lacked credible research support. They also included a number of methodologies, soon to be condemned by an influential religious and political constituency, which labeled them as exemplars of a dangerously invasive "secular humanism." This ambiguity, lack of a credible research base, some excesses, political vicissitudes, and the "back to basics" movement in education ended the meteoric rise of affective education, so that, today, only a few of the multitude of identified curricula and teaching materials (Morse, W.C. & Munger, R.L., 1975) are still readily available to educators.

However, a parallel and more focused line of research and curriculum building has been more quietly initiated, developed, researched, and disseminated during the past twenty years — concentrating on activities which enhance children's social competencies through "cognitive" social problem solving activities. Although affective and empathic concepts are included, these are subordinate to the major goal of en-

hancing measurable competencies, which research has shown to correlate with the school's now identified objectives of improved classroom climate, improved participation and involvement, appropriate deportment, and enhanced productivity — as well as applied behavioral scientists' goals directed toward the promotion of positive well-being (Cowan, 1977). Other pioneers in social competency training for children, Myrna Shure and George Spivack — along with their colleagues in Philadelphia — have devoted the past two decades to carefully evaluating their Interpersonal Cognitive Problem Solving (ICPS) curricula for preschoolers and elementary school children (1982). These curricula have provided the impetus for further curriculum development by the "Rochester group," with their Social Problem Solving (SPS) curricula (Weissberg, Gesten, Liebenstein, Doherty-Schmid, & Hutton, 1980; Work, 1986), as well as the more recent New Jersey-based Improving Social Awareness— Social Problem Solving (ISA/SPS) curriculum (Elias,Gara,Ubriaco, Rothbaum, Clabby, & Schuyler, 1986) and the Michigan-based Pupil Involvement/Problem Solving with People (PI/PSP) curricula (Schelkun, 1987; 1985) discussed here.

Social Systems Interventions and Quality of Work Life (QWL):

For many reasons, school systems have proved remarkably resistant to sustained change, and a variety of "change agents" have recommended "systems'" and "organizational development" interventions for those who wish to implement lasting differences in the way school personnel interact with children and with each other. (Allen, Chinsky, Larcen, Lochman, & Selinger, 1976; Schmuck, & Runckel 1985). The total, four-level Quality of School Life (QSL-E) program serves as the organizational context for Pupil Involvement through Problem Solving with People (PI/PSP) classroom training. The total program is based on industry's Quality of Work Life/Quality Circle (QWL/QC) programs, which provide training, structure, and legitimacy for appropriate employee involvement and participation in organizational problem solving and decision-making. Pioneered and popularized by Deming (Walton, 1986), supervisor/worker Quality Circles have become widespread in business and industry, and Deming's standards have been adapted to a variety of settings, including portions of the public sector. The Quality of Work Life (QWL) model is a legitimized, standard, highly structured, systematic approach to employee participation: as such, it is readily transportable and may be disseminated across a wide range of organizational settings and cultures. With appropriate alterations, the model has proved adaptable to school districts, and Quality Circles (PI/PSP Circles) in the elementary school classrooms are creating and maintaining changed teacher-student relationships, much as supervisor-worker relationships are altered in the factories.

THE PRESENT STUDY

The major questions investigated in this study involve the QSL:PI/PSP curriculum's potential to teach concepts and skills similar to those investigated by researchers who have reported results of the ICPS and SPS curricula. Such studies have demonstrated a variety of beneficial effects on a large number of individual competencies (Spivack, Platt, and Shure, 1976; Weissberg et al,1981; Elias, Gara, Ubriaco, & Schuyler, 1982; Elias et al, 1986; Urbain and Kendall,1980), especially when the problem-solving training has been targeted for specific tasks (Durlak,1983). Students' sense of involvement, a major objective of

the PI/PSP curriculum, has been linked by at least one study to improved classroom climate, reduced problem behaviors, and high social competence (Wright,Cowen, & Caplan, 1982). Most previous studies reporting these results have focused on improving the competencies of children as individuals. The study reported in this paper expands the unit of analysis to target the teacher/student classroom as a single functional cluster, using a presentation method and coding paradigm (Hallarman, Aberbach & Schelkun, 1987) similar to that of the OMI, used by the Rochester group (Polifka, Weissberg,Gesten, Flores de Apodaca, & Piccoli,1981) to investigate individual abilities. (Individual student effects of the QSL: PI/PSP curriculum, reflecting the OMI and other measures, will be reported in future publications.)

The current study investigates a portion of a larger, system-wide program, the Quality of School Life (QSL-E) Program for Elementary Schools. QSL-E is a structured, four level "systems" intervention targeted to involve the following four layers of a school district: (1) elementary school classrooms (PI/PSP), (2) school teachers and other staff (TI/SI), (3) families (FI), and (4) an administrator/union representative Steering Committee (S-C) (Schelkun, Tableman, Cooper, & Groves, 1987). During 1984-5, the program was begun in a single elementary school, as a pilot demonstration for District A, whose Board then committed to a five year plan for full-system programmatic dissemination. The present study reports on a portion of Pupil Involvement (PI/PSP) data collected in 1985-6; similar analyses for the second evaluation year (1986-7) will be presented at a later date.

One major difference in this study is the focus on the observed problem-solving abilities of the entire class unit of teacher/students, rather than on individuals — since the ultimate goal of the QSL program's PI/PSP intervention is to improve classroom climate and the way teachers and children interact during the school day. Hypotheses were related to the teacher/child unit's ability to perform social-problem-solving activities similar to those reported in studies which focus mainly on individual skill-building. Here, the major questions involved the ability of the more extensive PI/PSP curriculum to provide skills similar to those previously reported, using the more problem-oriented and individually-focused ICPS and SPS strategies.

METHOD

Participants and Setting

The study was conducted in two mid-sized urban communities in Southeastern Michigan. The eight program, Pupil Involvement, classrooms (PI's) were recruited from three participating elementary schools in the Program District (District A). Because the goals of the larger QSL-E Program required continued dissemination of materials and training throughout District A, the eight comparison classrooms (non-PI's) were recruited from a single school in a neighboring district (District B). (School personnel's descriptions of child populations led to the perception that the program and comparison schools' populations were functionally equivalent.)

With cooperation from the building administrators, project staff recruited classrooms during school staff meetings at the close of the preceding school year, and both program and comparison classrooms were

volunteered by their teachers. All classrooms volunteered by teachers from the four evaluated grade levels were accepted. Each participating teacher was paid a modest stipend for three periods of full data-gathering ($150), half at the beginning and half at the end of the school year. Parental permission was received for 100% of the students in comparison classrooms; however, no permission was required for the program classrooms, since the evaluation reflected programming which had been approved by the District for general use throughout the District.

The scope of this paper reflects approximately one third of the data collected in 1985-6; the remainder will be analyzed and discussed in future reports.

Procedures

This report contrasts the social problem-solving abilities of the trained "Pupil Involvement" problem-solving classrooms (PI Circles) with comparable, untrained classrooms, noting whether and how they engage in (1) concrete and empathic observation (2) relevant antecedent thinking, (3) identifying relevant problems, (4) effective means/ends thinking, and (5) reaching consensus on an appropriate action plans. Observed teacher and student behaviors relating to school climate will be briefly noted.

The instructional phase of this study consisted of 21+ lessons (a number of supplemental lessons being optional). Each lesson was taught in 15 minute segments, and teachers were encouraged to take as many days for each lesson as seemed necessary and comfortable. (The lessons averaged 2 - 4 sessions.) Essential features of each lesson were highlighted, and teachers were instructed to adapt the remaining content to suit their personal style. Problem-solving sessions were held continuously, from October through May. Teachers were encouraged to hold Pupil Involvement problem-solving sessions (PI Circles) daily; however, the press of other matters produced an average of 2-3 weekly sessions. Teachers were encouraged to intersperse PI training sessions (curriculum) with "real-life" classroom PI problem solving, and to hold their 15 minute problem-solving sessions at a predictable time each day.

The structured QSL: PI/PSP training utilized a "clean draft" of the present version (Schelkun, 1987), which contains 5 scripted units, whose content was determined during 15 years of school consultation by staff of the Washtenaw County Community Mental Health Center's previous Behavioral Science Education Project (BSEP). Units I-III provide the classrooms with concepts and skills which experience has shown to be useful as a cognitive and behavioral context for classroom problem-solving. (These units provide similar procedures — for understanding the "big picture," for managing discussions, for data-based fact-finding, and for recommending solutions — that are utilized in training adults for industry's QWL programs.) Unit IV contains the basic 8-step PSP sequence — an extension of work by ERCA, and the ICPS, SPS models previously mentioned. Unit V adapts the single-focus problem-solving process to the dyadic process of negotiation.

This study investigates the class units' skill acquisition for Unit IV in the PI/PSP curriculum, which contains a number of story outlines, from which teachers select those which fit the realities of their classrooms. Lessons followed a structured problem-solving sequence, using specified prompts for various

segments of the 8-step process. To maintain focus on the problem and to assist with visual learning, visible presentations of ideas developed during the planning process were preserved and posted on a structured "storyboard" and/or on newsprint. (APPENDIX A: Sample story outline and storyboard). Each Pupil Involvement session was interrupted soon after an audible timer announced the end of the recommended 15 minute time segment; unfinished sessions were summarized and resumed at the next meeting of the PI Circle.

As needed, program teachers had access to weekly consultation by QSL staff during the 1984-5 school year; comparison teachers received none. Teachers in comparison classrooms were told that we were studying the natural development of a classroom's problem-solving skills over a typical school year, and that if they wished, in the following year we would offer them consultation, training, and a curriculum that might help the class improve these skills. In a relationship-building effort, program and comparison staffs were provided with teachers' stress management training workshops during the evaluation year.

Each program classroom was provided with the appropriate level, "clean draft" PI/PSP curriculum, along with a number of teaching aids: a packet of stimulus cartoons, a digital timer, several pads of lined newsprint, "feelings" posters, a "3 D's for Telling" poster, blank dry-erase "story cards" for use on the storyboard, a plastic ASK ME/TELL ME disk, a roll of heavy twine for use with the "Personal Space" lesson, as well as sock puppets, for grades 1 and 2. Program teachers received 15 hours of general PI skill training in late August, prior to the school year. At that time, they were merely introduced to PSP skills and, following the first stage of data gathering, were offered follow-up training and consultation for the more complex 8 step problem-solving sequence (PSP). Teachers were re-reimbursed for attending this training at the normal District rate of $12/hour.

Assessment

Selection of subject classrooms

Eight intervention (program) elementary school classrooms and eight grade-matched comparison classrooms participated in this study. Two program classrooms from each grade level (1, 2, 4, 5) were selected from three elementary schools in District A; comparison classrooms were similarly selected from a single school in District B. Description of key demographic indicators, such as racial composition, gender, California Achievement Test (CAT) scores for reading and mathematics and perceived socio-economic status (SES-P) are summarized in TABLE 1. (SES-P is an estimate of teacher "expectation," based on the address of student's residence.)

DEMOGRAPHIC SUMMARY

	PROGRAM CLASSES	COMPARISON CLASSES
PERCEIVED SES		
LOW (%)	32	02
MID (%)	40	67
HIGH (%)	23	32
GENDER		
MALE (%)	56	47
FEMALE (%)	44	53
RACE		
CAUCASIAN (%)	64	73
BLACK (%)	32	12
HISPANIC (%)	1	2
ARABIC (%)	1	2
AM INDIAN (%)	0.5	0.6
ACHIEVEMENT(CAT)		
READING	4.5 +/- 2.4	6.1 +/- 3.2
MATH	4.3 +/- 2.0	5.4 +/- 2.5

TABLE 1

Stimulus presentation and class discussion:

The current study utilizes coded videotapes to investigate classroom competence for the UNIT IV: PSP portion of the PI/PSP social-competency curriculum, and examines teacher/student behaviors while the class engages in a typical social-problem-solving activity. (Consultants kept weekly activity logs during the school year, to indicate whether teachers utilized the PSP unit to criterion, a minimum of 3 storyboard situations and 3 "real life" classroom problem discussions.) In the fall of 1985, and again in May, 1986, teachers were presented with the same "stick figure" cartoon, depicting three children at play, and a fourth child (Terry), "left out" of the fun (APPENDIX B). Teachers were given minimal instructions: (a) to meet with the total class, (b) to identify the depicted situation, and (c) to "hold a discussion with the class, in order to help Terry solve the presented problem." They were given no time limit, and the full discussion was videotaped in a single session. Additional information about the problem situation was printed on the reverse side of the stimulus cartoon. Average videotaping time was 45 minutes, following which, each class was permitted to view its videotape. Group behavioral sequences were coded for all videotapes, according to criteria (APPENDIX C) similar to those developed for assessment of individual problem-solving behaviors, by the Rochester Group (Polifka, Weissberg, Gesten, Flores de Apodaca, & Piccoli, 1981).

Hypotheses:

Hypotheses in this study were as follows: (1) That, in solving a specimen problem, the trained class units would demonstrate more and better sequential group problem-solving behaviors than the untrained units; (2) That the trained class units would produce more appropriate action plans than untrained classes; (3) That the trained class units would focus more appropriately on effective problem solving strategies; (4) That the trained classes would waste less effort on repetitive and irrelevant verbalizations than the untrained

classrooms; and (5) That the trained classroom units would improve more in behaviors that reflect an appropriate problem solving "climate" than the untrained classroom.

Data Analysis:

(1) For program and comparison groups, we computed the percent (%) of the following:

- PSP dichotomous (yes/no) sequence items;
- alternate (ALT), variant (VAR), chained (CH) and irrelevant (IR) solutions provided; and
- content categories for ALT's;

(2) Pre- and post-intervention frequency differences between groups were then compared, using $\chi 2$ tests of statistical significance ;

3) Intervally-scaled PSP relevancy items and measures of observed classroom climate were analyzed, using appropriate small sample size parametric statistics.

Direction of scores

In order to improve reporting, coding was scored in a positive direction. When reading the following charts, except for "static" scores (VAR's, CH's, IR's), increasing scores indicate more positive results, regardless of the verbal descriptors.

Inter-rater Reliability

The kappa statistic, a measure of interrater reliability, corrects for chance-expected agreement (Cohen, 1960; Fleiss, 1981). Kappa coefficients for select PSP sequence items were calculated, to determine the degree of agreement among trained videotape raters. Kappa coefficients for *problem identification, best and worst ending,* and *alternative solutions* with *consequences* ranged from moderately good (.62) to excellent (1.0).

RESULTS

Ability to follow the problem-solving sequence

$\chi 2$ comparisons between % frequencies for *PSP Sequence* items in program and comparison classrooms at pre- (Time 1) and post-intervention (Time 2) are summarized in TABLE 2.

TABLE 2

Of special interest are those *PSP Sequence* items, where groups had been comparable at Time 1, but significantly differed at Time 2. These *PSP Sequence* items (described in APPENDIX C) include: 2C, 3C, 5B, 5C, 6A, 7A, 9A, and 10A . With the exception of item 2C (where Students provided suggestions for situational *antecedents*), percent frequencies were significantly greater at post-intervention for program classrooms than for comparisons. The differences in item 1B also showed improvements in the program group's abilities, approaching statistical significance.

Relevancy to stimulus situation

Comparisons between groups for *relevancy* items (1D, 2D,3D) showed no significant differences prior to the intervention (Table 3).

TABLE 3

However, a highly significant difference between groups emerged at post-intervention for item 3D, indicating that program classrooms were better able to identify a *specific and relevant focus* for Terry's problem than were comparison classrooms ($\chi 2\ (14) = 2.95,\ p < .01$).

Effectiveness of solutions to problem situation

Analyses of *solution effectiveness* show some significant differences in the number of (1) effective alternate (ALT), and (2) ineffective ("static") responses between groups at pre- and post-intervention (Table 4).

TABLE 4

("Static" responses are defined as three types of ineffective response: variant (VAR), chained (CH), and irrelevant (IR) responses. Examples are presented in APPENDIX C). The "static" vs. effectiveness comparisons are more readily observed when viewed in graphic form.

FIGURE 1-A

Figure 1-A shows *effective suggestions* (ALT's) displayed against the *less effective* VAR's, CH's, and IR's; whereas Figure 1-B combines the three types of ineffective *"static"* responses and displays their totals against the *effective* ALT's.

FIGURE 1-B

Figures 1-A and 1-B compare classrooms for % frequencies for ALT vs. "static" solution effectiveness responses at pre-and post-intervention. $\chi 2$ comparisons showed that, at post-intervention, program classrooms offered a significantly greater frequency of *effective*, ALT, and fewer *ineffective*, "static," solutions than did the comparison classrooms ($\chi 2\ (1) = 7.46,\ p < .01$).

At pre-intervention, there were no significant differences between classrooms for total number of *effective* (ALT), nor for two types of *ineffective* (VAR and IR) responses. In contrast to

the comparison group, program classrooms showed a significantly greater number of *effective* (ALT) responses than did comparisons ($\chi 2$ (1) = 3.95, $p < .05$), had decreased significantly in the number of *ineffective* VAR responses ($\chi 2$ (1) = 2.7, $p < .10$) and showed a marked decrease in *ineffective* IR responses. Although the program classroom had a significantly greater number of *ineffective* (CH) responses than the comparison classroom prior to training ($\chi 2$ (1) = 9.3, $p < .001$) — by Time 2, program classrooms had improved to a comparable level, showing a decrease in their previous ineffective CH responses at Time 2.

Content of effective solutions (ALT's)

Comparisons of solution *content* for both groups' effective suggestions (ALTS) — (Figure 2) — indicated that at Time 1 there was significantly greater help-seeking content in the responses provided by the program classrooms($\chi 2$ (1) = 5.34, $p < .05$). At Time 2, the program classrooms had reduced the number of help-seeking solutions, so that post-intervention comparisons then indicated no significant differences between groups for help-seeking content. (For this "friends-seeking" situation, "help-seeking" ("Ask the teacher to make them play.") and "non-confrontation" ("Just go away.")were prejudged to be inferior to such strategies as "direct action" ("Show them you know how")and "verbal assertion."("Tell them you'd like to play").

FIGURE 2

After training, significant differences emerged for responses involving *direct action* ($\chi 2$ (1) = 4.46, $p < .05$) and for *non-confrontation* ($\chi 2$ (1) =10.65, $p < .001$). Program classrooms suggested effective responses which suggested more *direct action* (do something specific); whereas comparison classrooms increased their suggestions for *non-confrontational* (back off) content. Results also indicated a trend toward increased *verbal assertion* (say something—nonaggressive) among program classrooms at Time 2.

Classroom discussion climate

Observed classroom *discussion climate* data, rating children's behaviors (Climate-C) are summarized in Table 5. (Discussion Climate variables are described in APPENDIX C)

TABLE 5

Results indicate that comparison classrooms initially showed more effective classroom *interaction skills* than did program classrooms; however, at post-intervention, program students had improved, and for various measures of effective classroom behavior, were showing levels of performance comparable to those of the previously more highly socialized comparison classrooms.

Ratings of teacher behaviors during the filmed problem-solving discussion are summarized in Table 6.

TABLE 6

At post-intervention, program teachers provided significantly greater *visual feedback* (codes 15, 16) to students and utilized a significantly wider scope of *fact-finding* techniques (code 18) than did comparison teachers. In addition, trends in a positive direction emerged at post intervention for the program classrooms, for all additional activities coded for teachers; whereas teachers in the comparison classroom showed some trends in the negative direction (reminding children to sit appropriately (9) and not exploring feelings as part of fact-finding (17).

DISCUSSION

The present study assesses an expanded social-competency training curriculum, which adds to a structured problem-solving sequence, to provide additional group problem-solving skills — similar to those utilized in industry's Quality Circles, where worker/supervisor units meet regularly in the work site to identify to identify and solve work-related problems. Over thirty years of research, development, and implementation of social competency training curricula for elementary schools (Ojemann, 1961; Shure & Spivack, 1982; Dinkmeyer, 1974; Weissberg, Gesten, Liebenstein, Doherty-Schmid, & Hutton, 1980; Elias, Gara, Ubriaco, & Schuyler,1982; Durlak, 1983), have demonstrated positive attitudinal and behavioral effects of training children in social problem-solving skills. These improvements have largely been linked to individual attributes, derived from the use of structured lessons which demonstrate both cognitive and affective approaches to social problem-solving.

This study expands the research unit of analysis to the entire teacher/student cluster, investigating some results of a five- unit, group social competency curriculum (QSL:PI/PSP), in which the basic, structured, social problem-solving (PSP) model comprises only one fifth of the suggested Pupil Involvement (PI) content. The remainder of the curriculum includes training in group communication and task-related interactions (Unit One); four aspects of group management: rules, norms, environment, and self-control (Unit Two); a cognitive review of emotions as motivators (Unit Three); application of fact-finding and other problem-solving activities to classroom situations (Unit Four); and expansion of problem-solving skills to parallel-cluster situations which require additional skills in negotiation (Unit Five).

The first four hypotheses in this study were significantly supported by analysis of pre- and post-training videotaped classroom problem-solving sessions: Trained groups (1) demonstrated more and better sequential group problem-solving behaviors, (2) produced more appropriate action plans, (3) focused more

appropriately on effective problem-solving strategies, and (4) wasted less effort on repetitive and irrelevant verbalizations. In addition, there were trends in the expected direction for effective student and teacher behaviors during the problem-solving discussions.

These findings are particularly noteworthy when we examine the demographic differences between the two groups. When selecting the comparison group, we had not been informed of the extent to which "busing" caused the two groups to differ in such important variables as socioeconomic status, cultural heterogeneity, and academic achievement. These differences made comparisons difficult when using individually focused measures, such as the OMI, because individually rated "comparison" children began at such a high level of competence that the significant improvements in program children could not confidently be reported as resulting from the programmatic intervention. However, we are far more confident here, when reporting results of the teacher/student unit's problem-solving challenge, since both groups were statistically comparable on most related measures, prior to the intervention. (Further analysis of individual competency is planned, with more comparable groups to be studied for skill and behavioral similarities and differences.)

For this study, the major questions hinged on issues related to teacher implementation and teacher/student acquisition of skills: *Would they/Could they* perform to the criteria targeted by the group social-problem-solving portion — embedded, as it was, in the larger curriculum? The data supports the belief that they can. (However, when the data is analyzed by grade level, positive trends are more pronounced for the upper elementary classrooms than for the lower. It is likely that the practice criteria will need to be increased for the younger children: future studies with grades K-2 will increase suggested time allotments for concepts and skills targeted by Unit Four of the QSL:PI:PSP curriculum.)

Some practical implications of this study are found when closely examining the problem-solving sequence. The methodology involved a completely "open" problem-solving interview: the teachers were given the stimulus cartoon and a few simple instructions. Then, they were on their own, much as we are in "real" life. Untrained classes became busily and happily engaged in their extensive discussions and reported enjoying the process. However, despite the untrained class's ability to offer as many good ideas (ALT's) at both early and later sessions, these good ideas were embedded in a lot of other talk (ineffective "static" responses) and were not recorded for further consideration. Consequently, the trained classes outperformed the untrained groups in being able to carrying the ideas forward: A significant number of trained classes formulated fruitful action plans, while none of the untrained classrooms did so. Examination of the data shows that the group problem-solving process seems to deteriorate at the point of antecedent thinking (What might have led up to this situation?) and problem identification (What might be the main problem?) — with children in untrained classes going off in a number of promising but uncontrolled directions, so that untrained classes do not reach any consensus on what a child might *do* to resolve the difficult situation.

It is interesting to note that, at the next level of QSL intervention, Teacher Involvement (TI) training points to a similar lack of focus when problem solving is attempted at the staff level: Untrained teacher/administrator groups interact actively, with many excellent suggestions — but no record of discus-

sion is presented and no explicit problem-solving sequence is followed. They rarely reach definite recommendations or conclusions, and this process often results in frustration and cynicism — "What's the use," "They don't listen," "They don't care." It is possible that teacher resistance to student empowerment in classroom decision-making derives from their belief that discussion may be an end in itself, but that it is not expected to lead anywhere.

A related finding is the fact that good verbal skills and numbers of good suggestions do not predict a "fit" of problem to suggested solutions: although the verbally skillful untrained comparison classroom offered more "good ideas" (ALT's) during pre- and post- discussions, children in the the trained group seemed more confident of their competence in reaching the goal of "making friends." They were significantly more likely to take appropriate *direct action*, while the comparison groups were more likely to suggest less effective *withdrawal* from the situation. Examination of the order of responses showed more than half of the effective ALT's were offered in the first four responses, with quality strongly dropping off after eight.

Several hoped-for outcomes were observed by the consultants. Teachers of trained classrooms were continually surprised at the children's wisdom, reasonableness, and ability to find appropriate solutions more suitable for their peer norms than those the teacher had considered. Teachers who were originally quite skeptical of empowering their students became more willing and able to delegate appropriate problem-solving procedures to the children, with the result that the process became more a team effort in the trained classrooms — with teachers becoming more participative and less directive.

A shortcoming of this study is that it did not include outside behavioral and climate-related outcomes. The social competency literature has far more studies — like the present one — which focus on skill acquisition. It is more difficult to design studies which convincingly point to improved behavioral consequences (Winer,Hilpert, Gesten,Cowen, & Schubin, 1982), and most of those who report such effects focus on the behavioral adjustment of individual children. The coding criteria for this study's group problem-solving process were based on similar criteria developed by researchers who have studied individual effects (Muus, 1960; Polifka, Weissberg, Gesten, Flores de Apodaca, & Piccoli, 1981), increasing the likelihood that such effects as milder reaction to school stressors (Elias et al, 1986), improved reactions to major transitions (Spivack & Shure, 1984; Elias, et al, 1986), and many authors' reports of improved behavioral adjustment (Spivack & Shure, 1984) may be found in children trained in PI/PSP procedures.

For a number of reasons, it seems worth-while to include investigations of the PI/PSP curriculum (as well as the abbreviated format, in the *Michigan Model for Comprehensive School Health Education* curriculum), as behavioral scientists continue to attend to the field of social competency training for elementary school children. This study indicates that PI/PSP is able to develop classroom skills similar to those developed for individuals through the ICPS and SPS curricula. Since PI Circles meet for the full school year, the PI/PSP curriculum satisfies a recognized need for the extended period of classroom training, which has been recommended by a number of authors (Muus, 1960; Spivack & Shure, 1984; Elias et al, 1986). It also trains for and encourages the teacher to incorporate systematic problem-solving

strategies into the school day — through "dialoguing" and other methods — as has also been recommended in the literature (Weissberg et al, 1981; Spivack & Shure, 1984). The curriculum has been designed for large-scale dissemination; it meets ecological objectives (Trickett, 1984) not highlighted in other curricula; it trains to alter specific ways that teachers and children relate to one another; and it avoids a number of specific political pitfalls which sometimes turn away school boards and administrators in deference to constituencies which associate certain procedures with "secular humanism" (Schlafly, 1986).

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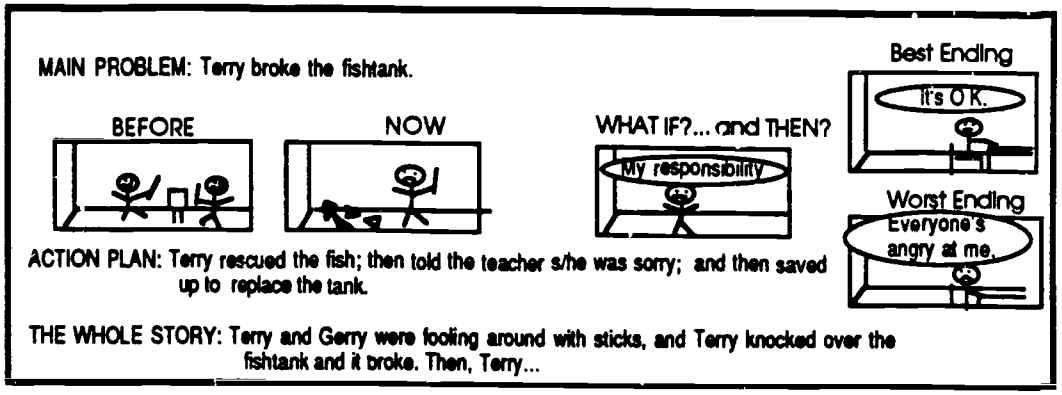
Appendix A

Sample Storyboard and Abbreviated Lesson Outline

F. MAKING GOOD: TERRY WAS CARELESS!

LEARNING OBJECTIVE: Children learn ways to responsibly face the consequences when they make destructive mistakes: (1) to CALMLY and specifically accept responsibility for the consequences, (2) to make appropriate restitution, and (3) to state what they have learned for the future.



ACTIVITIES:

1. The cartoon suggests *one possible solution* to Terry's problem: Terry gave Gerry a stick and showed Gerry a new trick to try with it (BEFORE). Terry was being rowdy and backed into the fishtank,knocking it over, breaking it, and spilling the fish on the floor (NOW). The Teacher follows the STORYBOARD process, as demonstrated in TERRY AND THE ROPE.

2. For Teacher's turn during the "MAIN PROBLEM" BRAINSTORM, the Teacher suggests that Terry has two PROBLEMS, and suggests that Terry save the fish first, then the remaining MAIN PROBLEM — "making good" — can be solved by the class. The Teacher makes it clear that LISTING PROBLEMS is helpful, because it sometimes shows us that we aren't finished when we solve one part of the problem situation; sometimes we have to solve several parts before we are finished.

3. For Teacher's turn during "WHAT IF?" BRAINSTORM about Terry's responsibility for the problem by MAKING GOOD, the Teacher elicits or offers responses which show *remorse* (Terry says s/he is sorry) and which show an attempt to *make up for actual damage* (Terry works it off in classroom chores; Terry saves his/her allowance and buys another fish tank; Terry brings his/her tank from home, *etc.*) Children discuss 3 needs: "being sorry, to remind us next time," making material amends—within our means — to "make good" the damages, and our helping others "make good," instead of punishing them.

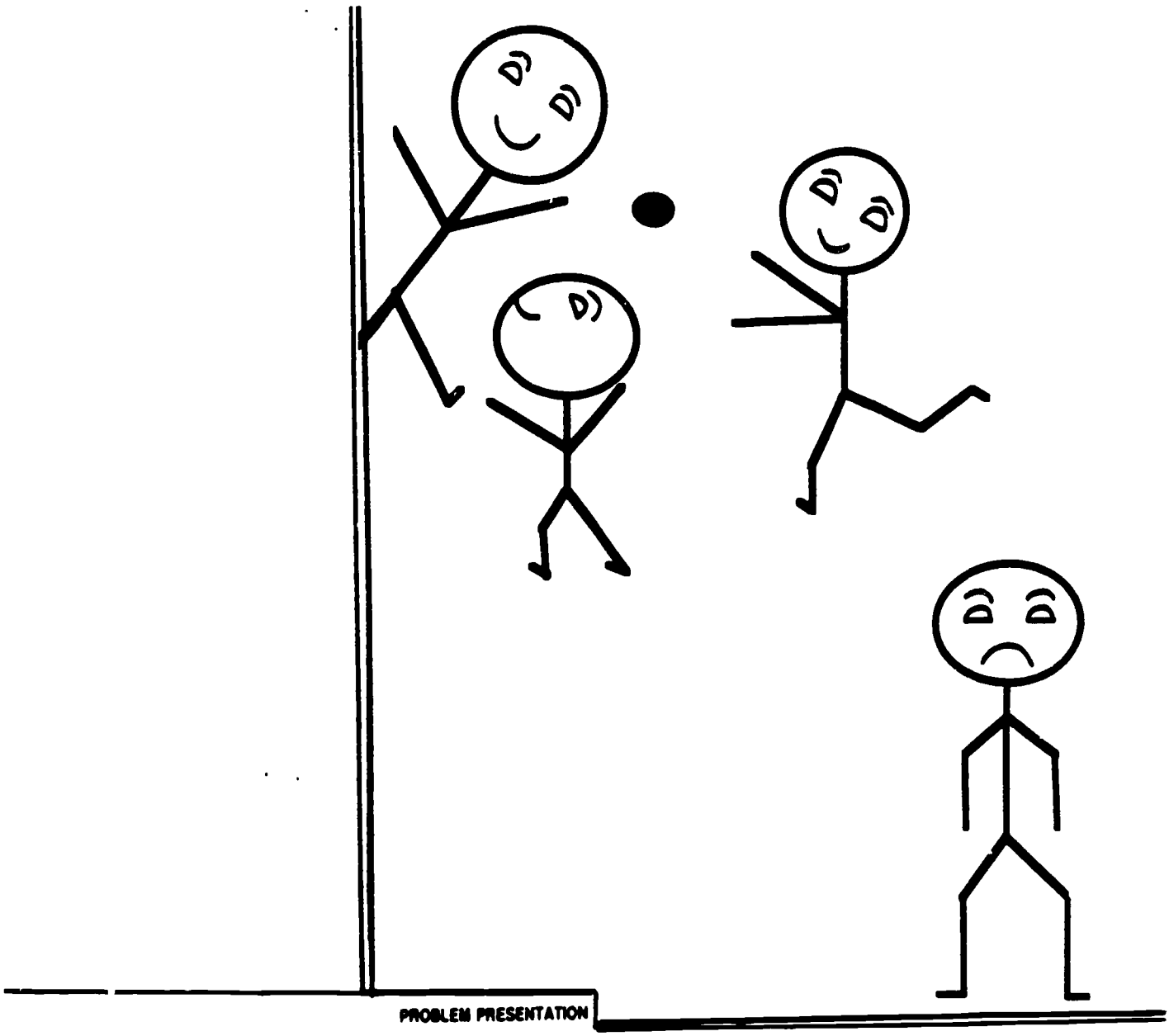
4. During the discussion of CONSEQUENCES, the class should discuss the need for CONSTRUCTIVE CONSEQUENCES. (Frequently, children become overly punitive and suggest excessive punishment, rather than constructive redress. Sometimes, children may let Terry off too easily, with a simple apology and no redress.) The class should discuss the difference between CONSTRUCTIVE CONSEQUENCES (helping us think, learn, and do better next time) and PUNISHMENT (helping someone to "get even.")

5. Teacher summarizes the story and leads discussion of WHAT WE HAVE LEARNED —which may include the dangers of playing with sticks, but should focus on the three LEARNING OBJECTIVES.

ENRICHMENT: The Teacher should be alert to classroom situations which require "making good," during the week or so following this lesson. On-the-spot problem solving and "dialoging" with children can be quick and brief, with the Teacher stressing CONSTRUCTIVE CONSEQUENCES. (It is possible that, for a short time, some children may test the issue by minor destructive acts. If the Teacher is consistent about insisting on (1) a statement of remorse, (2) appropriate restitution, (3) a statement regarding what has been learned for the future, the "testing" period should be fairly brief.)

Appendix B

Stimulus Cartoon and Background Information



1 Teacher shows class the "stick drawing."

2 Teacher says, "This picture is about a person about your age, named Terry

It has some other children, also See, they are playing ball together *

3 Terry has a problem. Let's make up a story about Terry solving the problem That way, we can help Terry solve the problem

---

Background Information

As the class tries to solve Terry's* problem, the following facts emerge:

- Terry is new to this school.
- The children are on the school playground at recess
- These children played with Terry yesterday.
- They do not want to play with Terry today. They are ignoring Terry.

* *Terry can be either a boy or a girl*

Appendix C

Coding and Variables:
Group Social Competency-Open Interview (GSC-OI)

DESCRIPTION OF VARIABLES AND CODING

Group PSP Sequence variables

• 1 B: NOW information — teacher provided • 1 C: NOW information — student provided • 1 D: NOW information — situation-relevancy	*Observation / empathy*
• 2 B: BEFORE information — teacher provided • 2 C: BEFORE information — student provided • 2 D: BEFORE information — situation-relevancy	*Antecedent thinking*
• 3 B: PROBLEM — teacher provided • 3 C: PROBLEM — student provided • 3 D: PROBLEM — situation-relevancy	*Problem identification*
• 4 B: BEST ENDING — teacher provided • 4 C: BEST ENDING — student provided	*Positive goal-setting*
• 5 B: WORST ENDING — teacher provided • 5 C: WORST ENDING — student provided	*Targeted avoidance*
• 6 A: ALTERNATIVES & CONSEQUENCES	*Brainstorming solutions*
• 7 A: ACTION PLAN — student provided	*Planning activities*
• 8 E: PSP SEQUENCE — provided	*Ordering suggestions*
• 9 A: SUMMARY NARRATIVE — provided	*Memory of events*
• 10 A: STUDENT VOTE — provided	*Consensus on plan*

(Categories: A/E noted presence of the designated variable - A=yes/no / E= 0,1,2 ; B noted teacher behaviors; C noted student behaviors; D noted relevancy of behaviors on a 5 point scale)

Group PSP Solution-Content variables

- C-1 Compromise (*eg*: Ask them, later, to play tomorrow.)
- C-2 Direct Action (*eg*: Show them you know how to play; Play ball with someone else.)
- C-3 Bargaining (*eg*: "I'll give you my ball if I can play.")
- C-4 Verbal Assertion (*eg*: Say, "I have no one to play with.")
- C-5 Help-seeking (*eg*: Ask the teacher to make them share.)
- C-6 Verbal Aggression (*eg*: Say,"I'll get even with you;" "I don't like you.")
- C-7 Physical Aggression (*eg*: Hit them; trip them up.)
- C-8 Non-confrontation (*eg*: Give up; Go play by self.)

(Solution-Content variables were coded on a 5 point scale)

Group PSP: Solution-Type Variables

- S-1 Alternate (ALT): (*eg*: grab the ball (1); offer them gum (3); just join in (4); ask nicely to play (5)
- S-2 Variant (VAR): (eg: take their ball (1); offer them candy (3); just play with them(4); say,"May I play, please? (5).
- S-3 Chain (CH): (eg: smile (3) at them and then, tomorrow, go buy some candy, but not eat it all up by himself...)
- S-4 Irrelevancy (IR): (eg: They shouldn't do that; basketball is more fun.)

(Solution-type variables were coded for effectiveness on a 5-point scale)

TABLE 2

Between Group CHI Square Comparisons
PSP % Frequencies

	Pre-Intervention			Post-Intervention		
Item	Program	Control	p value	Program	Control	p value
1B	13%	13%	NS	50%	38%	.06
1C	38%	63%	.0001	63%	75%	.05
2B	0	38%	.0001	75%	25%	.0001
2C	50%	38%	NS	25%	63%	.0001
3B	13%	0	.0001	38%	0	.0001
3C	100%	100%	NS	88%	75%	.01
4B	13%	0	.0001	25%	0	.0001
4C	0	13%	.0001	63%	0	.0001
5B	0	0	NS	25%	0	.0001
5C	0	0	NS	38%	0	.0001
6A	13%	19%	NS	75%	8%	.0001
7A	0	0	NS	88%	0	.0001
8A	13%	0	.0001	75%	0	.0001
9A	0	0	NS	63%	0	.0001
10A	0	0	NS	88%	25%	0001

PSP SEQUENCE DESCRIPTION

1A NOW Is it present?
1B NOW Teacher provided?
1C NOW Student provided?
1D NOW Relevant to stimulus?

2A BEFORE Is it present?
2B BEFORE Teacher provided?
2C BEFORE. Student provided?
2D BEFORE Relevant to stimulus?

3A PROBLEM ID: Is it present?
3B PROBLEM ID Teacher identified?
3C PROBLEM ID. Student identified?
3D PROBLEM ID. Relevant to stimulus?

4A BEST ENDING: Is it present?
4B BEST ENDING: Teacher provided?
4C BEST ENDING: Student provided?
4D BEST ENDING: Relevant to stimulus?

5A WORST ENDING: Is it present?
5B WORST ENDING: Teacher provided?
5C WORST ENDING: Student provided?
5D WORST ENDING: Relevant to stimulus?

6A ALTS/CONSEQUENCES paired?

7A ACTION PLAN: Is it present?

8A PSP SEQUENCE: Is it followed?

9A NARRATIVE SUMMARY Is it present?

10A STUDENT CONSENSUS Do they VOTE ?

TABLE 3

PSP RELEVANCY
GROUP MEAN COMPARISONS

	PRE- INTERVENTION			POST- INTERVENTION		
	PROGRAM	CONTROL		PROGRAM	CONTROL	
1D	6 6	1 8	NS	3 1	2 4	NS
2D	2 0	1 8	NS	2 4	2 6	NS
3D	3.8	3.6	NS	3.9	1.9	.01

TABLE 4

BETWEEN GROUP CHI SQUARE COMPARISONS

SOLUTION % FREQUENCIES

Categories	Pre-Intervention			Post-Intervention		
	Program (n=8)	Control (n=8)	p value	Program (n=8)	Control (n=8)	p value
Alternates	29%	33%	NS	53%	38%	0.05
Variants	18%	28%	NS	19%	30%	0.1
Chains	13%	1%	0.001	4%	0	NS
Irrelevants	40%	38%	NS	24%	32%	NS

FIGURE 1 - A

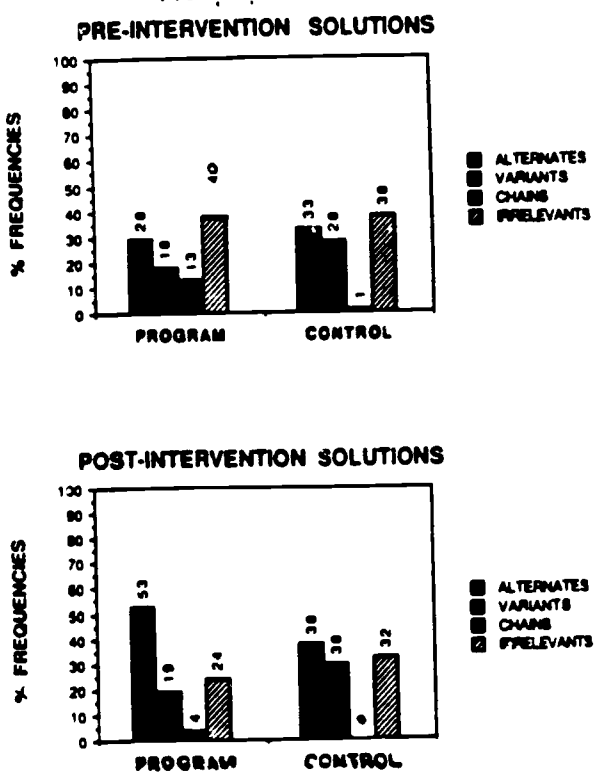


FIGURE 1 - B

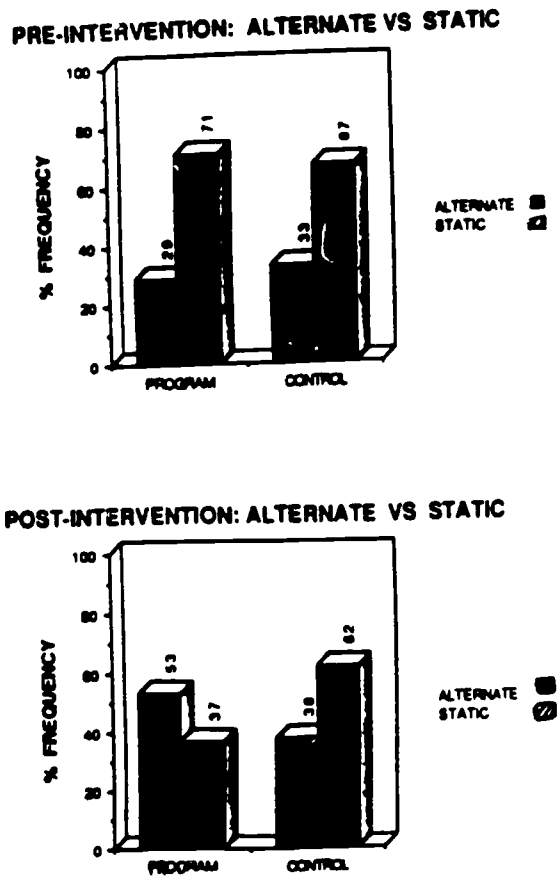


TABLE 5

CLIMATE C / BETWEEN GROUP COMPARISONS

	TIME 1			TIME 2		
	Program (n=8)	Control (n=8)	p value	Program (n=8)	Control (n=8)	p value
1	1 38	1 1[illegible]	NS	1 38	1 13	NS
2	1 00	1 25	NS	1 38	1 00	NS
3	1 13	1.00	0.01	1 63	2.00	NS
4	2 00	2 00	NS	2 00	1 88	NS
5	0 75	1 50	0 05	1 50	1 50	NS
8	0	0	NS	0 13	8	NS
7	1 13	1 75	NS	1.50	1 50	NS
11	1 50	2.00	NS	1 88	1.63	NS
12	0 63	1.25	0 10	1 13	1 13	NS
13	1 38	1.63	NS	1 88	1.63	NS

TABLE 6

CLIMATE T BETWEEN GROUP MEAN COMPARISONS

	TIME 1			TIME 2		
	Program (n=8)	Control (n=8)	p value	Program (n=8)	Control (n=8)	p value
8	1 38	2 00	0 01	1 88	2 00	NS
9	1.38	2 00	0 01	1 83	1.75	NS
10	0 12	0	NS	0 50	0 00	NS
14	0	0	NS	0 63	0 00	NS
15	0	0	NS	2 00	0.00	0 001
16	0	0	NS	1 00	0 00	0 01
17	0 37	0 75	NS	1 25	0 50	NS
18	0	0	NS	1.00	0 00	0 01
16	0	0	NS	0 50	0 00	NS
20	0	0	NS	0 50	0 13	NS

Discussion "Climate" Items
(Interval data: Scale = 0-2)

1 Children take turns according to an organized method
2. Children put hands down when someone is called on (n handwaviing)
3 Ch do not speak out of turn.
4 Children are appropriately responsive when called on
5 Children do not clown around during discussion.
6 Children use clear nonverbal signalit.
7 Children do not laugh at or tease peers.
8 Teacher did not interrupt flow of discussion to discipline children
9 Teacher doesn't remindchildren how to sit appropriately for discussion
10 Teacher uses clear non-verbal signal.
11. Children do not disrupt inappropriately to express personal need or thought
12. Children do not appear bored or uninterested in group discusion.
13 Children respond to specific question posed.
14 Teacher delegates some tasks to children.
15. Teacher used visual written feedback.
16 TEacher uses graphic feedback.
17 Teacher explores feelins as part of fact-finding (NOW).
18 Teacher explores senses as part of fact-finding (NOW).
19 Teacher explores thoughts as part of fact-finding
20. Teacher discusses "What if that doesn't work," after Action Plan.